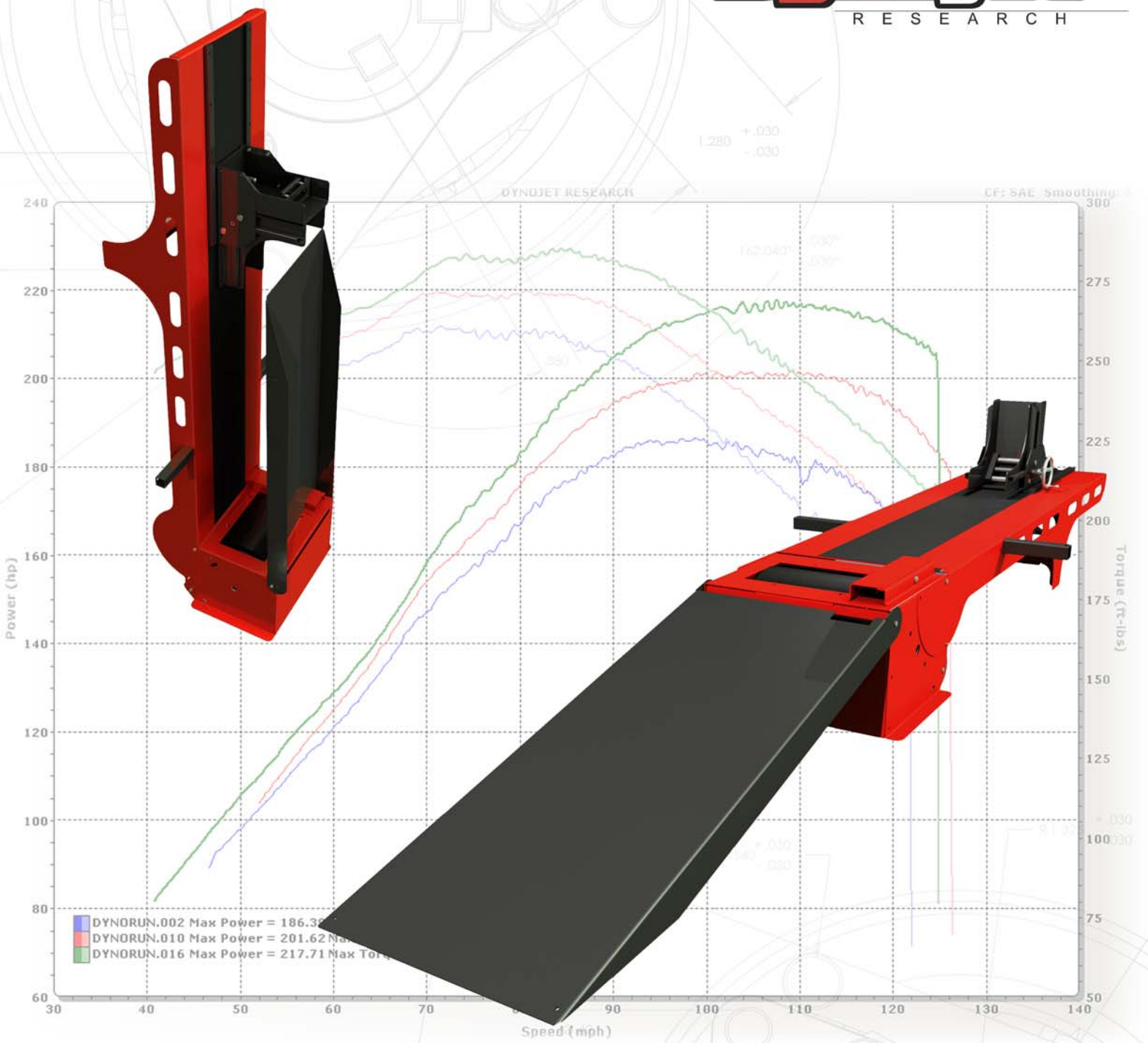
Dynojet RESEARCH



Installation Guide

For Model SD12 Scooter Dynamometers

P/N 98200024.03

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Installation Guide For Model SD12 Scooter Dynamometers.

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WARNINGS

Disclaimers

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Dynojet reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of Dynojet to notify any person of such revision or changes.

Dynojet is not responsible for false operation due to unexpected dynamometer operation such as may be caused by static, software bugs, hardware failure, etc.

Dynojet is not responsible for damage resulting from improper installation of the dynamometer or from improper service rendered to the dynamometer. Dynojet is not responsible for damage incurred due to alteration of the dynamometer or components, use of unapproved parts, or abuse to the dynamometer.

Do not connect or disconnect cables or components on the dynamometer with the power on.

Always wear protective clothing, ear protection, and eye protection (goggles, safety glasses) when using and servicing the dynamometer.

CAUTION

Equipment Power Requirements

The dynamometer has specific power requirements. Connecting the dynamometer to the incorrect voltage will void the dynamometer warranty. Installation may require a licensed electrician.

WARNING

Potentially Lethal Voltages

Components attached to and within the dynamometer operate with potentially lethal voltages. To provide the greatest assurance of safety, the AC power cord(s) must be disconnected from the power source before servicing electrical components or wiring. Disconnect all power cords before servicing electrical components for the greatest assurance of safety.

WARNING

Electrostatic Discharge Precautions

Electrostatic Discharge

Electrostatic Discharge (ESD), or static shock, can damage electronic components within the dynamometer. The damage may occur at the time of an ESD occurrence, or the shock may degrade the component, resulting in a premature component failure later. To avoid ESD damage, always practice good ESD control precautions when servicing the dynamometer. Dynojet designs its dynamometers to be very tolerant of static shocks by the users, but the electronics are vulnerable when the electronics are exposed. ESD occurs as a result of a difference of potential between two objects when the two objects touch. Damage occurs as a result of the energy released when the discharge (touch) occurs. The difference of potential can accumulate by as simple an action as a user moving across carpet or a seat. If that person's energy is discharged directly to the electronics, the electronics can be damaged.

Precautions

To protect against ESD damage, you must eliminate the difference of potential before the electronics are handled. Touch the chassis of the dynamometer before touching any of the electronics. By touching the chassis, you discharge any static shocks to the chassis instead of to the electronics.

If you are holding a circuit board or dynamometer component in your hand when you approach the machine, touch the chassis of the dynamometer with your hand before installing the circuit board or component.

When handing a circuit board or component to someone, touch that person with your hand first, then hand them the component.

Always carry circuit boards in anti-static bags when the boards are exposed (removed from the dynamometer).

CAUTION

Battery Fire and Explosion Hazards

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Automotive Batteries

In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

Do not allow the positive and negative terminals to short-circuit. The dynamometer chassis is tied to the negative side of the battery. Do not short between the positive battery terminal or the starter connections to the chassis. In addition, make sure metal tools such as screw drivers, wrenches, and torque wrenches do not come in contact with the negative and positive terminals of the battery. Short circuiting the terminals of the battery can cause burn injuries, damage to the dynamometer, or trigger explosions.

Charging

Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby.

Wear protective clothing, eye and face protection, when charging or handling batteries.

WARNING

Other Potential Hazards

The AC power outlet shall be installed near the equipment and it shall be easily accessible to allow for disconnect before service.

The dynamometer should be located in a well ventilated area. There is a carbon monoxide hazard with all internal combustion engines. Engine exhaust contains poisonous carbon monoxide gas. Breathing it could cause death.

Any dyno room design must incorporate sufficient exhaust extraction.

Always wear proper ear and eye protection when operating the dynamometer.

Never operate the dynamometer with the covers removed.

Never stand behind the dynamometer when in operation.

Never operate the dynamometer when there is excessive vibration or noise. Resolve these problems before proceeding.

Never fuel the vehicle on the dynamometer unless appropriate safety measures are taken.

Verify brake operation before beginning any dynamometer testing.

Verify the vehicle is properly secured to the dynamometer.

Never operate the blowers without the guards installed.

Exercise care with any dynamometer testing; portions of the dynamometer and vehicle may become hot.

As with any equipment using electricity and having moving parts, there are potential hazards. To use this dynamometer safely, the operator should become familiar with the instructions for operation of the dynamometer and always exercise care when using it.

Do not repair or replace any part of the dynamometer or attempt any servicing unless specifically recommended in published user-repair instructions that you understand and have the skills to carry out.

CHAPTER

1

SPECIFICATIONS AND OPERATING REQUIREMENTS

Thank you for purchasing Dynojet's Model SD12 Scooter Dynamometer. Dynojet's software and dynamometers will give you the power to get the maximum performance out of vehicles you evaluate. Whether you are new to the benefits of a chassis dynamometer or an experienced performance leader, the repeatability and diagnostic tools of WinPEP 7 software and a Dynojet dynamometer will give you the professional results you are looking for.

This document provides instructions for installing the scooter dynamometer (dyno). This document will walk you through operating requirements, installation, accessories, and basic dyno operation. To ensure safety and accuracy in the procedures, perform the procedures as they are described.

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Last Updated: 05-24-2011

This chapter is divided into the following categories:

- Introduction, page 1-2
- Dynamometer Specifications and Requirements, page 1-4
- Dyno Electronics, page 1-7

INTRODUCTION

Before installing your dyno, please take a moment to read this guide for installation instructions, dyno features, and other important information.

This guide is designed to be a reference tool in your everyday work and includes the following chapters and information:

Specifications and Operating Requirements

This chapter describes the requirements and specifications for the dyno.

Installation

This chapter describes the procedures for installing the dyno.

Basic Dyno Operation

This chapter describes basic dyno operating procedures.

Conventions Used In This Manual

The conventions used in this manual are designed to protect both the user and the equipment.

example of convention	description
	The Caution icon indicates a potential hazard to the dynamometer equipment. Follow all procedures exactly as they are described and use care when performing all procedures.
	The Warning icon indicates potential harm to the person performing a procedure and/or the dynamometer equipment.
	The Record # icon reminds you to record your dynamometer and/or eddy current brake (retarder) number on the inside cover of this manual.
Bold	Highlights items you can select on in the software interface, including buttons and menus.
➤	The arrow indicates a menu choice. For example, "select **File ➤Open**" means "select the **File** menu, then select the **Open** choice on the **File** menu."

Technical Support

For assistance, please contact Dynojet Technical Support at 1-800-992-3525, or write to Dynojet at 2191 Mendenhall Drive, North Las Vegas, NV 89081.

Visit us on the World Wide Web at www.dynojet.com and www.winpep.com where Dynojet provides state of the art technical support, on-line shopping, 3D visualizations, and press releases about our latest product lines.

YOUR DYNO ROOM

This section is not meant to imply that a dyno room is essential to repeatable results on a Dynojet dynamometer. However, a dyno room with an engine cooling intake fan, exhaust extraction, and noise reduction capabilities can add a new dimension to your shop.

A proper dyno room design will help to ensure repeatable, accurate runs. A good dyno room should do the following:

- minimize noise
- provide a controlled environment for testing
- provide a view window (safety glass) for customers
- be designed with safety in mind

Intake Air Fan—After building your dyno room, you will need to supply an intake air fan. The intake air fan supplies air to cool the bike's engine while supplying fresh oxygen for you and your bike to breathe. It is a common misconception that you cannot tune a bike without a large fan simulating exact road conditions; however, a good cooling fan is the only requirement for consistent diagnostics and tuning. The installed fan should be 5200 CFM.

Equalizer Box—If the air flow rate coming into the dyno room is greater than the air flow rate leaving the dyno room, the room will become pressurized. A pressurized dyno room will make measured power misleading. To compensate, you need an equalizer box. The equalizer box is a baffled (to reduce noise) vent to the outside of your dyno room. The size of the equalizer box is dependent on the size of your dyno room and the size of your fans.

Exhaust Extraction—An exhaust fan is needed to remove exhaust gasses, especially carbon monoxide, from the dyno room. Carbon monoxide is potentially lethal to people if not removed from the room and will affect engine power when mixed with fresh air. Plans for exhaust extraction (P/N 73429201) are available from Dynojet.

Engine exhaust contains poisonous carbon monoxide gas. Breathing it could cause death. Operate machine in well ventilated area.

Fire Suppression—Always have adequate fire suppression or fire extinguishers in your dyno room.

Industrial Noise Control, Inc.—Industrial Noise Control, Inc. offers a zinc-coated steel room custom built to your specifications. This room meets all dyno room requirements. The dyno room must be clean and dry with a comfortable room air temperature above 32 degrees Fahrenheit (0 degrees Celsius), and have some system of exhaust extraction. For more information on a dyno room, refer to your Pre-Installation Guide For Model 200i, 250i, 200iP, and 250iP Motorcycle Dynamometers (P/N 98129103).

DYNAMOMETER SPECIFICATIONS AND REQUIREMENTS

The following specifications and requirements will help you set up your dyno area and verify you have the requirements to operate your dyno safely.

CHASSIS SPECIFICATIONS

description	specifications
Length	
dyno	218.70 cm (86.10 in.)
with ramp	335.92 cm (131.25 in.)
Height	
to top of dyno	31.00 cm (12.21 in.)
to top of wheel clamp	61.10 cm (24.05 in.)
Width	
of dyno	48.21 cm (18.98 in.)
of dyno with tie-downs	86.36 cm (34.00 in.)
Weight	
dyno/crated dyno	272 kg (600 pounds)
Drum	
diameter	30.50 cm (12.00 in.)
width	35.56 cm (14.00 in.)
Frame	structural steel
Maximum Speed	175 KPH (109 MPH)
Maximum Scooter Length (front of front wheel to center of rear wheel)	188.27 cm (74.125 in.)
Remote Switches	remote software control

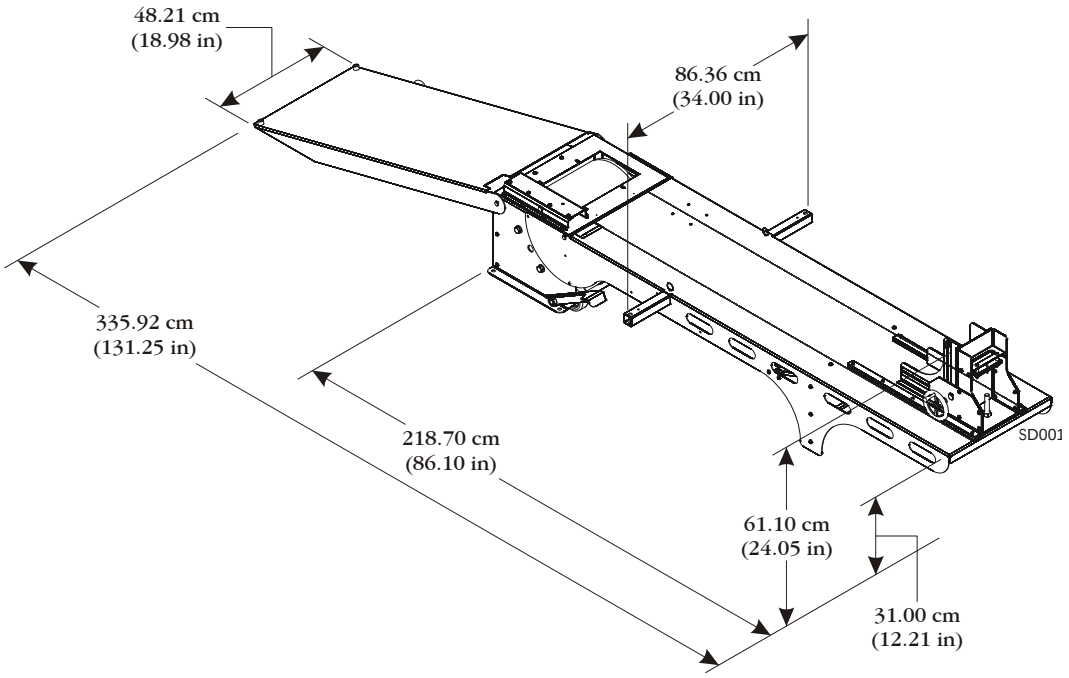


Figure 1-1: Model SD12 Dyno Dimensions

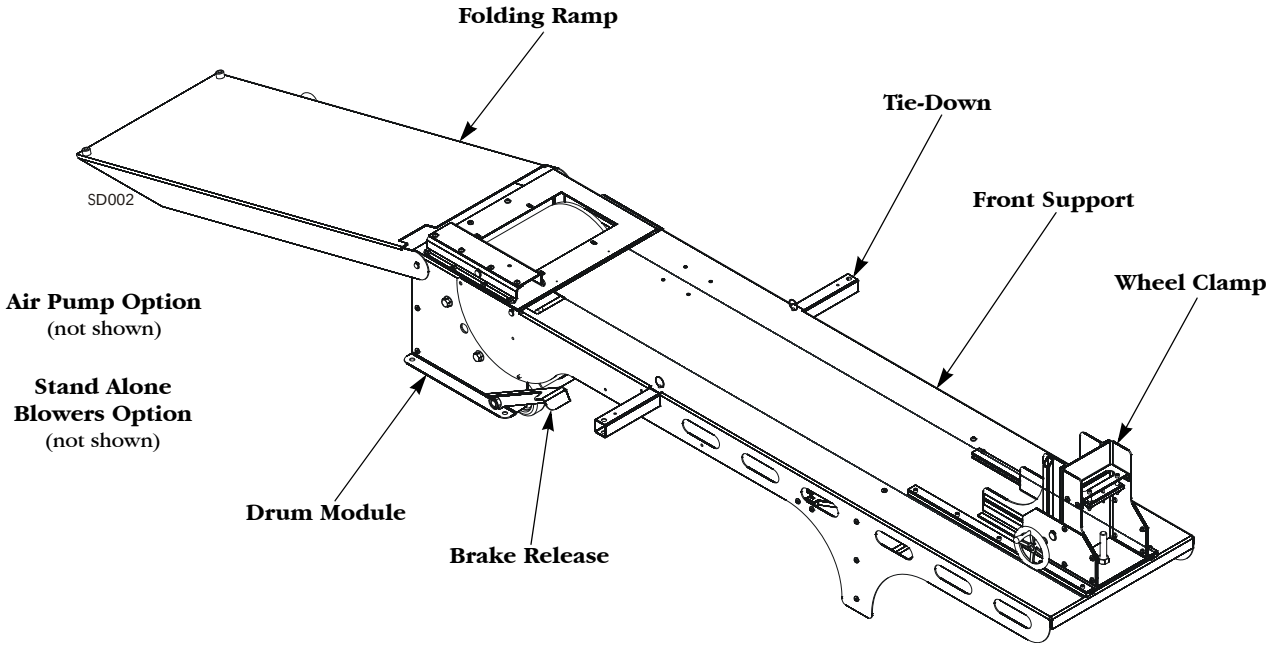


Figure 1-2: Model SD12 Dyno

Compressed Air Requirements

The following requirements are needed for optional compressed air pump assembly:

- Clean and dry air, 100 psi or greater, 5 CFM or better flow
- Fittings to hook your air system to a 3/8-inch inside diameter hose (if no air brake is present)
- optional air regulator

Computer Specifications

You will need to provide a computer system to run the WinPEP software. WinPEP 7 includes complete documentation in online Help. From the WinPEP 7 menu bar, choose **Help ►WinPEP 7 Help** or visit www.winpep.com (accessible with a valid user name and password). Refer to the section on Computer Specifications in the WinPEP documentation, P/N 98118103, for the specific computer system requirements.

Environmental Requirements

description	specifications
Temperature	
operating min./max	10°C/50°C (50°F/122°F)
storage min./max	0°C/60°C (32°F/140°F)
Humidity	0 to 95% non condensing

Forklift Requirements

You will need to provide equipment capable of lifting a minimum of 454 kg. (1000 lb.) to lift and move the crated dyno.

You will need to provide a 5/8-inch x 3-foot steel bar to lift the drum off the crate.

Phone and Internet Access

Dynojet recommends you have a phone close to the dyno to call for assistance in an emergency. You may also wish to contact Dynojet to troubleshoot your dyno.

Internet access on your computer is desirable for contacting Dynojet and downloading new information and updates.

Tie-Down Straps

Dynojet recommends using motorcycle tie-down straps for securing the bike on the dyno. You will need to provide the tie-down straps.

DYNO ELECTRONICS

The standard dyno electronics package is comprised of four interconnected modules: Atmospheric Sensing Module, RPM Module, Dynamometer Input/Output Module, and the CPU Module. For more information refer to your WinPEP 7 User Guide (P/N 98118103).

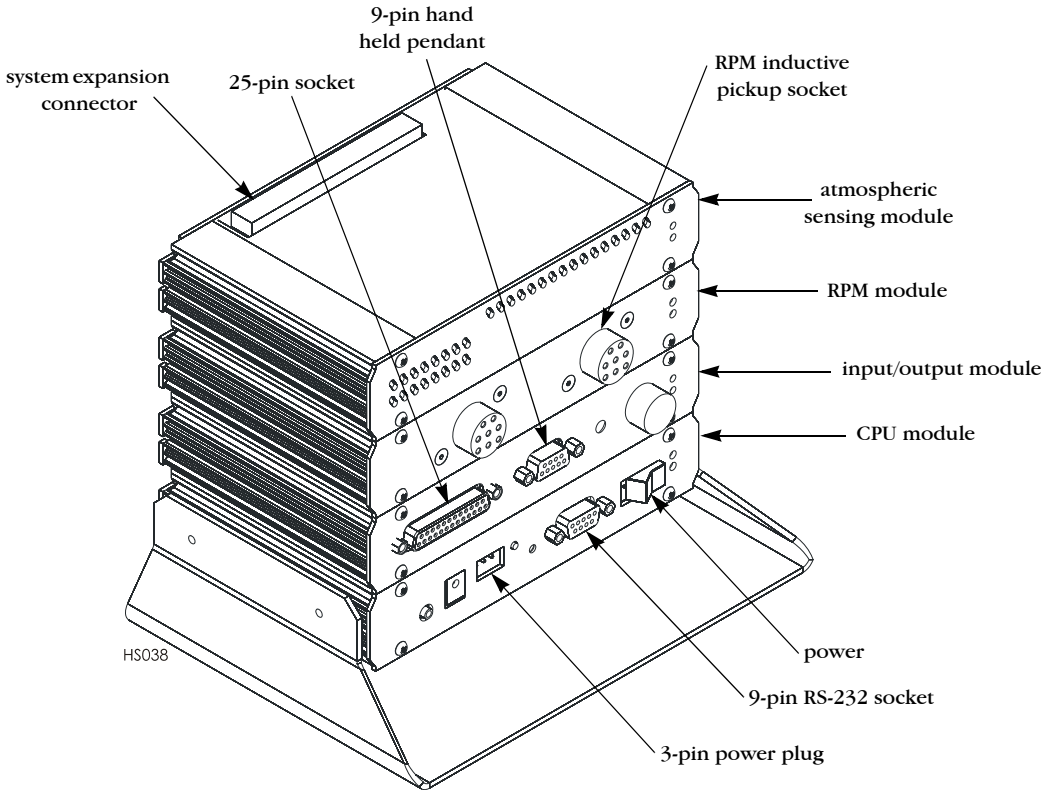


Figure 1-3: The Dyno Electronics

CHAPTER

2

INSTALLATION

This chapter will walk you through unpacking and installing the dynamometer. To ensure safety and accuracy in the procedures, perform the procedures as they are described.

This chapter is divided into the following categories:

- Unpacking the Dyno, page 2-2
- Installation, page 2-4
- Fold and Move the Dyno, page 2-10
- Accessories, page 2-13

UNPACKING THE DYNO

When you receive your dyno, examine the exterior of the shipping container for any visible damage. If damage is detected at this stage, contact the shipper or Dynojet before proceeding with unpacking.

Use the following steps to unload your dyno. You will need to provide equipment capable of lifting a minimum of 454 kg (1000 pounds) to move the crated dyno into position in your dyno room. Refer to "Dynamometer Specifications and Requirements" on page 1-4 for more information.

The following directions describe how to unpack, and install your dyno. Follow the directions in the order that they are presented.

UNPACKING THE DYNO

1 Move the crated dyno to a clear area near your dyno room.

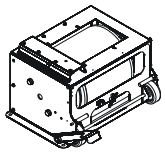
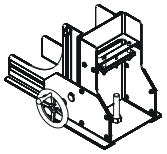
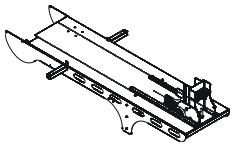
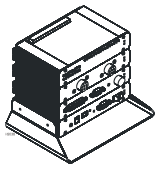
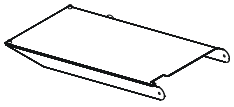
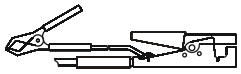
2 Using a pry bar, or a large flat screwdriver, and a hammer, carefully remove the top and sides of the crate.

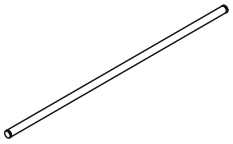
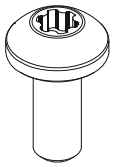
Note: At this point, you will want to inspect the exterior of the dyno for any indications of damage. Report any damage immediately.

Be sure you record the dynamometer number on the inside cover of this manual.

3 Remove the hardware boxes from the crate.

4 Verify the contents of the hardware boxes and set aside.

part	description	part	description
	drum		wheel clamp P/N 71300003
	front support		dyno electronics P/N 76199001
	ramp		inductive secondary pickup P/N DE100-109S

part	description	part	description
	axle shaft (2) P/N 22100011		inductive primary pickup clip P/N DE100-110L
	retaining ring, 1/2" (4) P/N 32800000		cable tie, 4" (2) P/N 197104130
	screw, 1/4-20 x 5/8", pan-head, torx (2) P/N 36561045		

Removing the Drum from the Crate

You will need to provide a 5/8-inch x 3-foot steel bar to lift the drum off the crate and into position in your dyno room. Lifting the drum will require two people.

Be sure you record the dynamometer number on the inside cover of this manual.

1 Remove the lag bolts and washers securing the drum to the crate base using a 9/16-inch socket, open or box end wrench.

2 Insert the 5/8-inch x 3-foot steel bar into the shaft hole.

3 Using two people, carefully lift the drum off the crate and move into position in your dyno room.

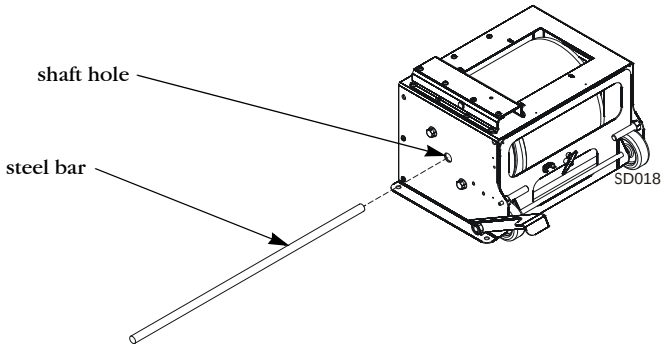


Figure 2-1: Insert the Steel Bar and Lift the Drum off the Crate

INSTALLATION

Use the following steps to install the scooter dyno.

You will need the following parts:

- Drum
- Front Support
- Ramp
- 197104130 Cable Tie, 4" (2)
- 22100011 Axle Shaft (2)
- 32800000 Retaining Ring, 1/2" (4)
- 36561045 Screw, 1/4-20 x 5/8", Pan-head, Torx (2)
- 71300003 Wheel Clamp

INSTALLING THE FRONT SUPPORT

1 Place the front support on the drum.

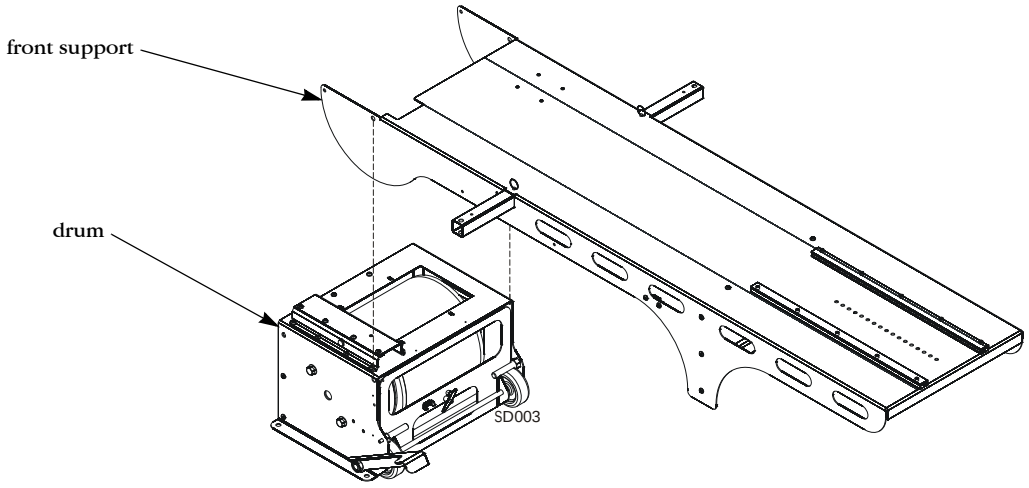


Figure 2-2: Place Front Support on the Drum

2 Install the front support axle shaft.

3 Secure the shaft in place using two retaining rings.

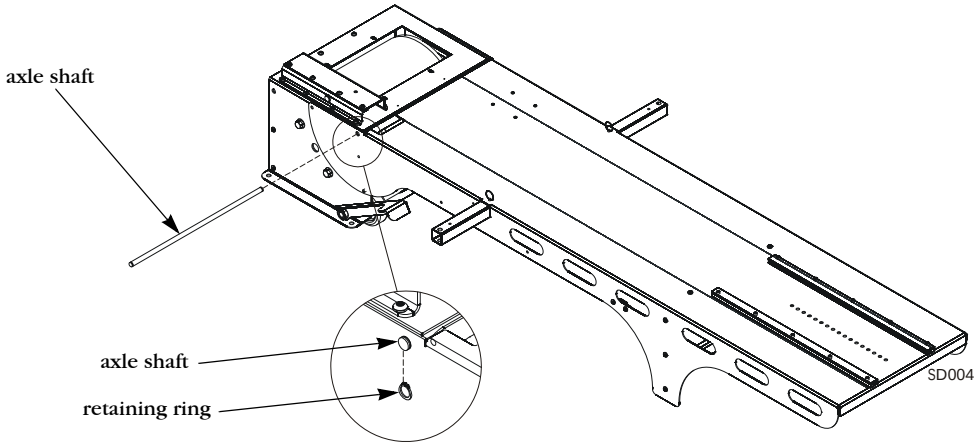


Figure 2-3: Install the Axle Shaft and Retaining Rings

4 Slide the wheel clamp onto the front support.

5 Lift the spring plunger to slide the wheel clamp to a different position. Release the spring plunger to lock the wheel clamp in the new position.

Note: The wheel clamp may already be installed.

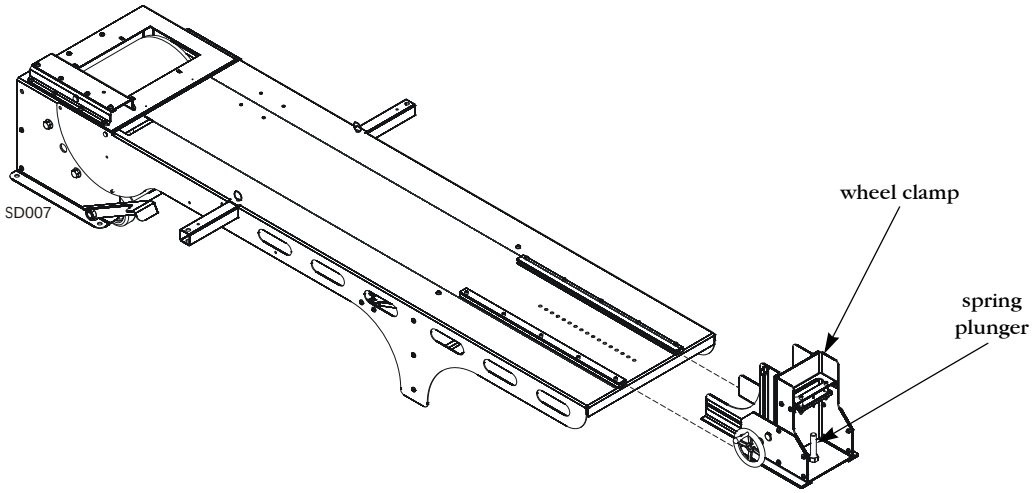


Figure 2-4: Install the Wheel Clamp

6 Route the control cable, lever, and control lever bracket from the drum along the inside of the front support.

Note: The control cable is coiled up and secured to the drum.

7 Secure the control lever bracket to the inside of the front support using two 1/4-20 x 5/8-inch pan-head torx screws.

8 Secure the control cable to the inside of the front support using two cable ties.

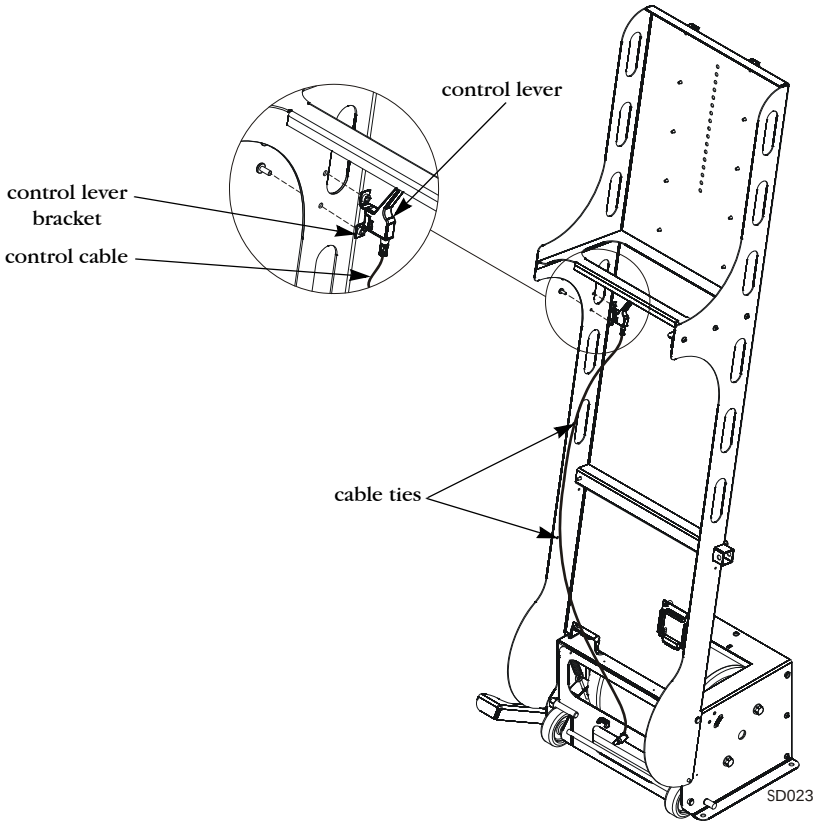


Figure 2-5: Install the Control Lever Bracket and Cable

ROUTING CABLES

1 Route the pickup card cable to the Breakout board.

Note: The pickup card is already installed and is located on the drum.

2 Route the 25-pin RS232 computer cable from the Breakout board to the dyno electronics CPU Module.

3 Route the 9-pin cable from the RS232 port on the dyno electronics to your computer.

For more information on wiring the Breakout board, refer to "Wiring the Breakout Board" on page 2-8. For more information on connecting cables to the dyno electronics, refer to "Dyno Electronics" on page 1-7.

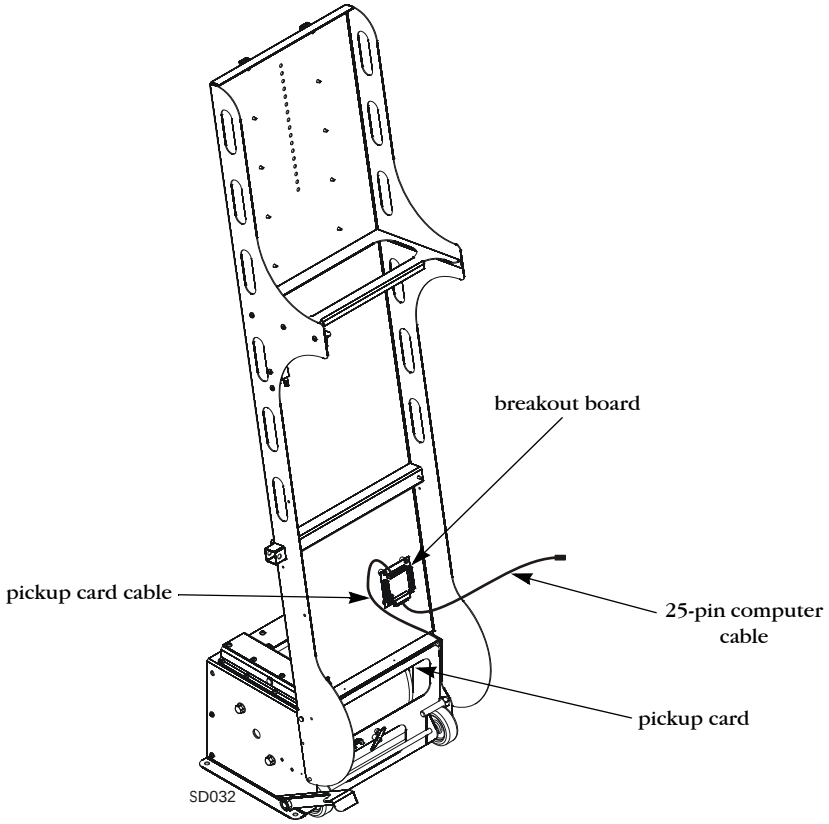


Figure 2-6: Routing Cables

WIRING THE BREAKOUT BOARD

1 Attach the pickup card cable to the Breakout board. The pickup card cable has four wires which connect to the wiring block labeled DRUM 1.

- Red wire connects to R1
- Black wire connects to B1
- White wire connects to W1
- Ground (shield) wire connects to S1

2 Attach the 25-pin RS232 computer cable to the Breakout board.

3 Verify jumpers J1 and J2 are set for the digital brake as shown in Figure 2-7.

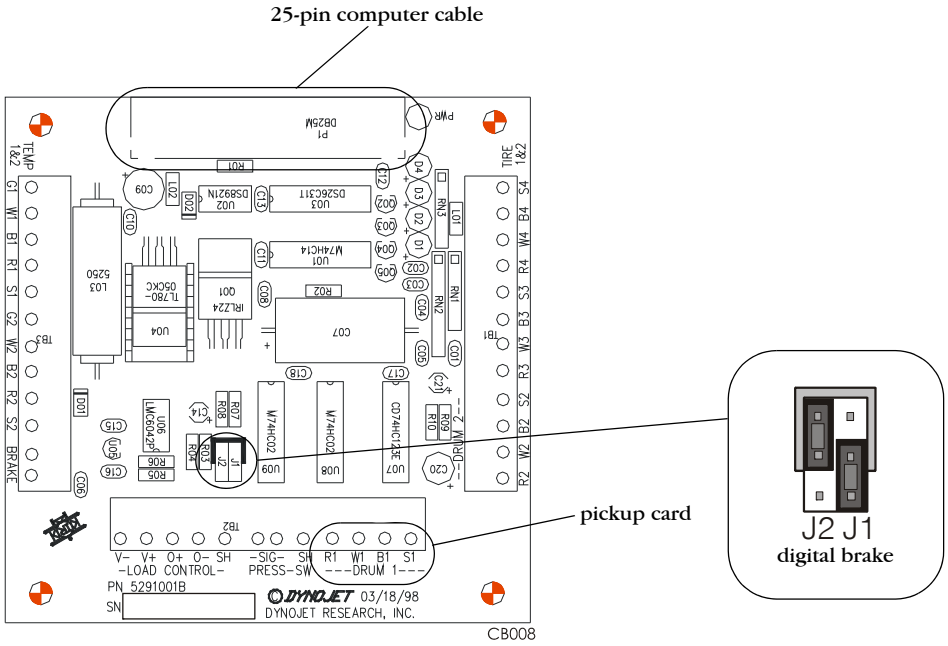


Figure 2-7: Wire the Breakout Board

INSTALLING THE RAMP

1 Place the ramp on the drum.
2 Install the ramp axle shaft.
3 Secure the shaft in place using two retaining rings.

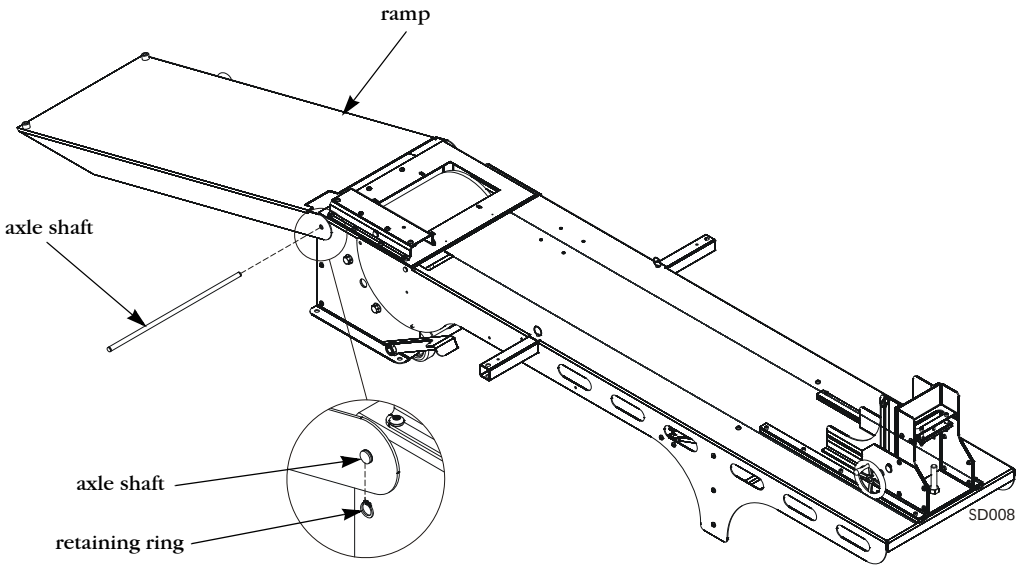


Figure 2-8: Install the Ramp

FOLD AND MOVE THE DYNO

Use the following instructions to fold and move the scooter dyno.

FOLDING THE DYNO

1. Lift the front support up until it clicks and locks into place.
2. Lift the spring plunger and slide the wheel clamp forward on the front support. Release the spring plunger to lock the wheel clamp in position.
3. Raise the ramp until it comes in contact with the front support.
4. Lift the spring plunger and slide the wheel clamp until it locks the ramp in place. Release the spring plunger.

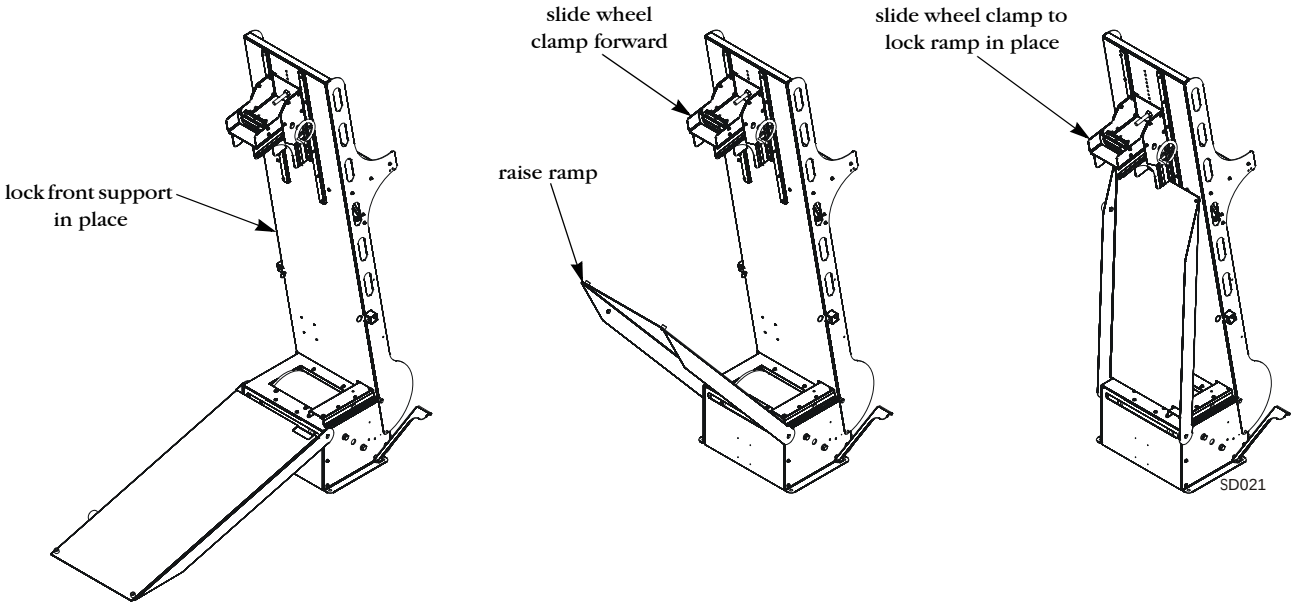


Figure 2-9: Folding the Dyno

MOVING THE DYNO

1 With the scooter dyno in the folded position, grab the front support leg brace.
2 Tilt the dyno towards you.
3 Roll the dyno to the desired position.

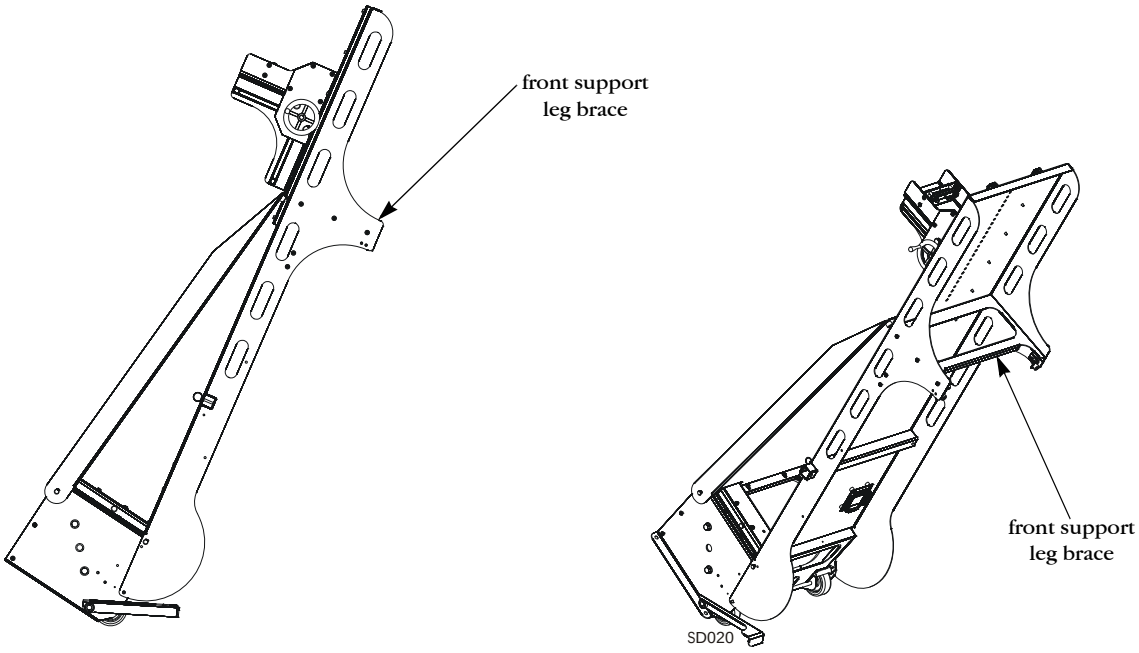


Figure 2-10: Moving the Dyno

OPENING THE DYNO

1 Lift the spring plunger and slide the wheel clamp forward. Release the spring plunger to lock the wheel clamp in position.
2 Lower the ramp to the floor.
3 Squeeze the control lever to release the front support.
4 Lower the front support to the floor.

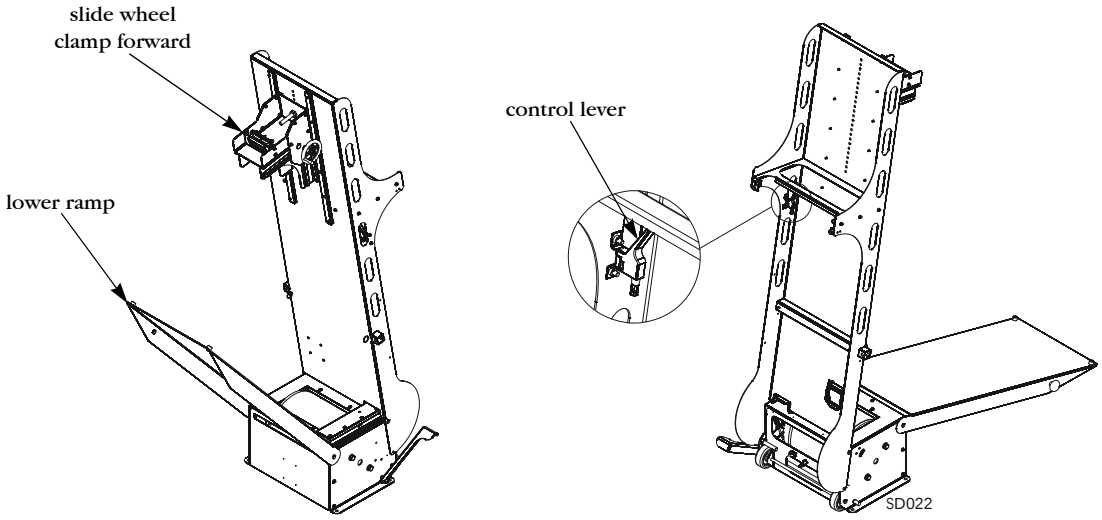


Figure 2-11: Opening the Dyno

ACCESSORIES

This section describes the various optional accessories that are available for the scooter dyno to meet your individual needs. For more information about these accessories, please contact Dynojet's Product Specialists at 1-800-992-3525 for pricing and availability. Complete installation instruction manuals may also be found by browsing the Manuals folder on your WinPEP installation CD.

COMPRESSED AIR PUMP ASSEMBLY

Refer to the Compressed Air Air Fuel Ratio Module Installation and User Guide (P/N 98200006) for proper operating and maintenance procedures. Refer to the Flow Meter User Guide (P/N 98129104) to test your air pump for accuracy. Failure to follow proper procedures may result in inaccurate data or damage to the equipment. These manuals can be found on your WinPEP CD or at www.dynojet.com.

The sensor and the copper sample tube are hot. Before touching the sensor or the sample tube, make sure it has cooled.

Leaded racing fuels and two-stroke applications will contaminate the sensor and dramatically shorten its service life.

The sensor is not covered by a warranty. Be sure to read and understand the Compressed Air Air Fuel Ratio Module Installation and User manual.

Before turning the pump on, verify there is no water in the hose.

Warm up the vehicle before placing the copper sample tube in the exhaust to avoid drawing excess water through the pump assembly.

Keep the air pump assembly upright. Tipping the pump assembly may result in damage to the sensor.

Leaks in the system will result in erroneous readings. Verify there are no cracks or holes in the hose. Verify the sensor is seated properly in the sensor block.

To ensure accurate readings, pump maintenance should be performed every six months, or sooner, depending on usage. Refer to the Compressed Air Air Fuel Ratio Module Installation and User Guide for more information.

STAND ALONE BLOWERS

Refer to the High Pressure Blower Installation Guide (P/N 98220105) for proper installation and operating procedures. These manuals can be found on your WinPEP CD or at www.dynojet.com.

CHAPTER

3

BASIC DYNO OPERATION

This chapter includes instructions for basic dyno operation. For more detailed instructions, refer to the WinPEP 7 User Guide. This manual can be found on your WinPEP CD or at www.dynojet.com.

This chapter is divided into the following categories:

- Loading the Vehicle, page 3-2
- Connecting the RPM Pickup, page 3-4
- Pre-Run Inspection, page 3-7
- Making a Test Run, page 3-9
- Preventative Maintenance, page 3-10

LOADING THE VEHICLE

Use the following steps to load a vehicle on the dyno.

WARNING

Risk of injury. Always wear proper eye and ear protection when operating the dyno.

1 Verify your computer is running.

2 Verify the wheel clamp is at the front of the front support.

Lift the spring plunger to slide the wheel clamp to a different position. Release the spring plunger to lock the wheel clamp in the new position.

3 Drive the vehicle onto the dyno and align the vehicle straight with the dyno.

4 Stop the vehicle when the drive axle is centered on the drum.

5 When the vehicle is positioned properly on the dyno, shut the engine off.

- If the vehicle has an automatic transmission, apply the parking brake.
- If the vehicle has a manual transmission, place it in gear.

6 Slide the wheel clamp up to the front tire of the vehicle.

Lift the spring plunger to slide the wheel clamp to a different position. Release the spring plunger to lock the wheel clamp in the new position.

7 Turn the wheel clamp handle until the front tire is held securely in the wheel clamp.

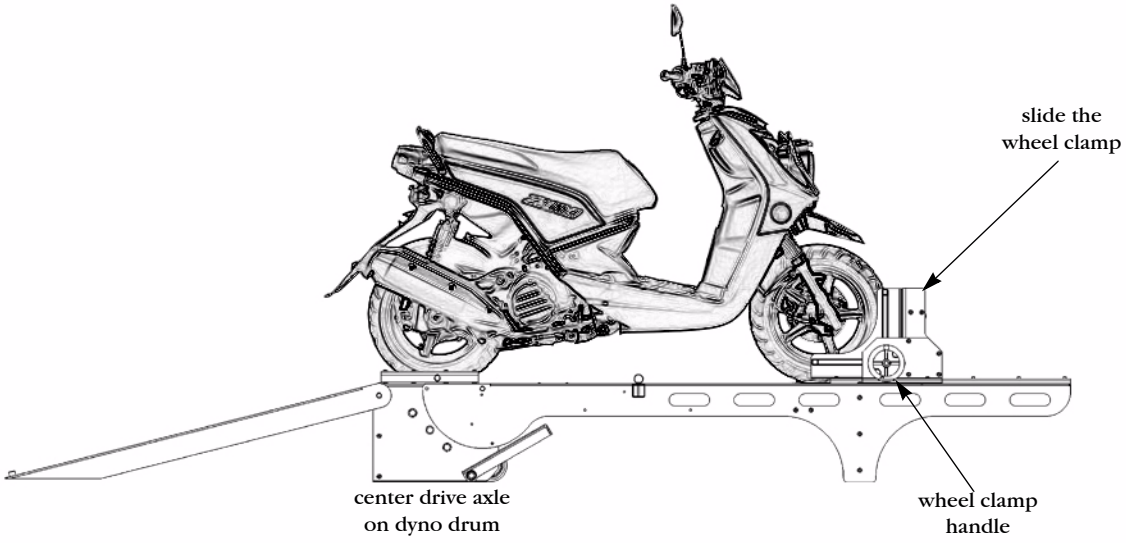


Figure 3-1: Load the Vehicle

8 Extend the tie-down outriggers.
   8a Remove the spring pins.
   8b Slide out the tie-down outriggers.
   8c Replace the spring pins.

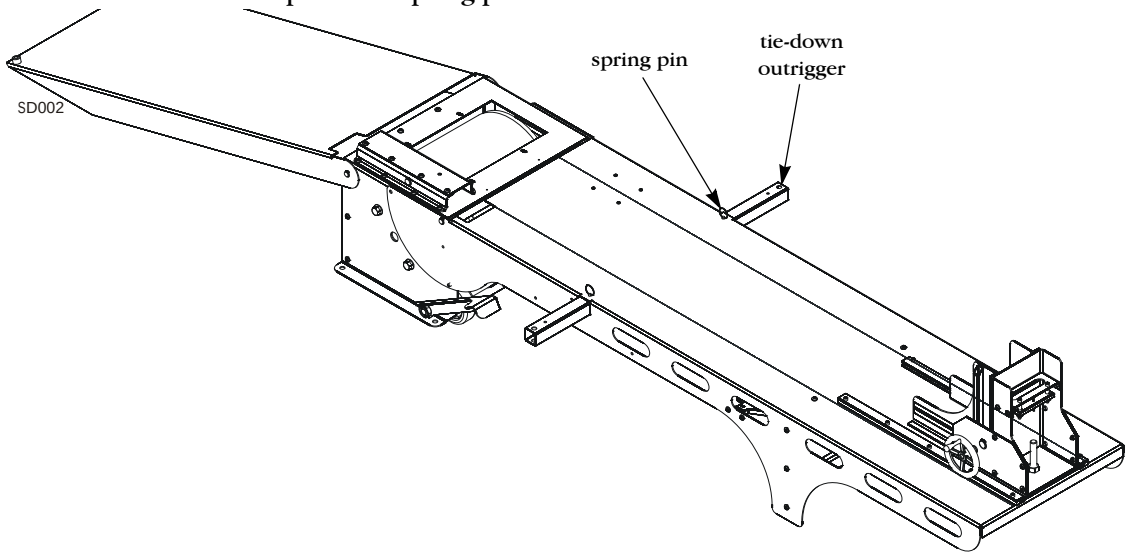


Figure 3-2: Extend the Tie-Down Outriggers

9 Attach two tie-down straps from the tie-downs on the dyno to the frame or luggage rack of the vehicle.

10 Tighten the tie-down straps evenly making sure the drive wheel remains centered on the drum.

WARNING

Never perform a dyno run if the tie-down straps are not in place or they are damaged.

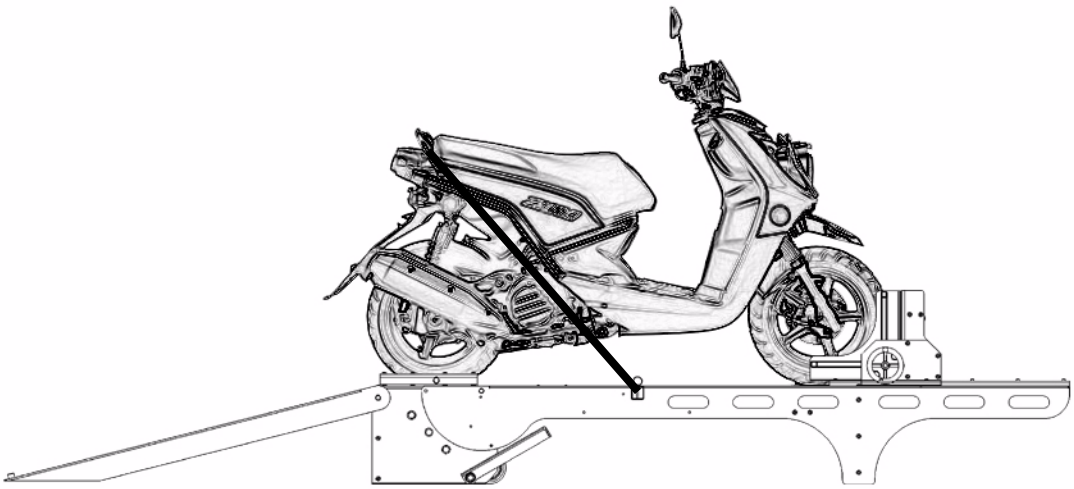


Figure 3-3: Attach the Tie-Downs

CONNECTING THE RPM PICKUP

Your Dynojet dynamometer includes a primary wire inductive pickup and two secondary wire inductive pickups. These small “clothespin like” inductive pickups are used to sense RPM. An RPM pickup is required if you want to view torque graphs. Generally you will use one secondary wire inductive pickup on a spark plug wire. Vehicles with wasted spark ignition systems may require two secondary inductive pickups. On a wasted spark ignition, typically one coil will be connected to two spark plug wires. Attach one secondary pickup to each of these wires. If the pickups are connected to two plug wires that do not fire at the same time, an erratic RPM readout may occur. The primary wire inductive pickup senses RPM pulses from the coil. Although this pickup location generally works better, it is harder to find the correct location to connect the RPM pickup.

Note: If a pickup is not being used, disconnect it from the dyno electronics to prevent any stray pick up of signals.

CAUTION

Inductive pickups are very fragile. The ferrite core can easily be damaged and is not covered under warranty. Dropping, snapping, vibration, and heat can all damage the ferrite core.

The dyno electronics RPM module contains the electronics that sense the RPM pulses. An auto-gain circuit looks at only the peak voltage of the vehicle’s spark, ignoring the lower voltages to help reduce electronic noise problems. Wasted spark ignition systems will produce a lower voltage level on the exhaust stroke than the compression stroke. By definition of the auto-gain circuit, lower voltage spark levels will be ignored, missing every other spark the vehicle would produce.

RPM Pickup Descriptions

RPM pickup	description
Secondaries (Non- wasted spark system)	Use one secondary pickup. Unplug the other pickup from the RPM module and set the degrees between plug fires to 720° in WinPEP 7.
Secondaries (Wasted spark ignition system)	Use two secondary pickups. Attach one pickup on each spark plug wire on the same coil and set the degrees between plug fires to 360° in WinPEP 7.
Primary pickup	Attach the primary wire pickup to the primary side of the coil. Set the degrees between plug fires by taking 720 (four cycle engines) or 360 (two cycle engines) divided by the number of coils. For example, the number of degrees between plug fires on a four cylinder four cycle engine with dual coils (where each coil fires two cylinders) is 720/4 x 2 = 360°.

CONNECTING THE SECONDARY INDUCTIVE PICKUP

The secondary inductive pickup cannot be in contact with, or it's connecting wire be crossing, other engine electrical wires or stray RF interference may result.

WARNING

The inductive pickups contain a fragile Ferrite Core that is sensitive to engine heat and vibration. Do not drop the inductive pickup or snap the pickup closed. Use extreme care in handling and placement of the pickups.

1 Clip the secondary inductive pickup around one spark plug wire.

Note: On a wasted spark ignition system, two secondary inductive pickup wires may be needed.

2 Route the inductive pickup cable clear of devices that produce electronic noise (spark plug wires, coil wire, coil etc.) to the dyno electronics RPM module.

Note: Inductive pickup placement is important. Position the inductive pickup so that it is not making contact with any other spark plug wires. Separate the spark plug wire from the spark plug wire bundle for proper operation.

Note: You must ground the vehicle to the dyno for the electronics to function properly.

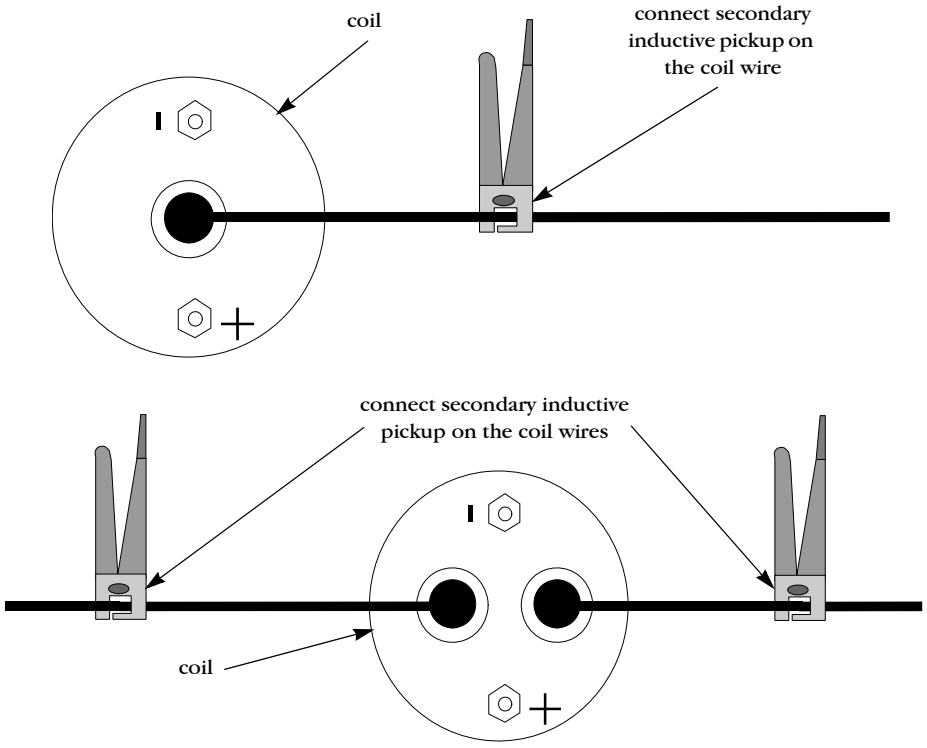


Figure 3-4: Connect the Secondary Inductive Pickup

CONNECTING THE PRIMARY INDUCTIVE PICKUP

The primary inductive pickup cannot be in contact with, or it's connecting wire be crossing, other engine electrical wires or stray RF interference may result.

WARNING

The inductive pickups contain a fragile Ferrite Core that is sensitive to engine heat and vibration. Do not drop the inductive pickup or snap the pickup closed. Use extreme care in handling and placement of the pickups.

1 Clip the primary inductive pickup around the wire to the primary side of the coil.

2 Route the primary wire cable clear of devices that produce electronic noise to the dyno electronics RPM module.

Note: You must ground the vehicle to the dyno for the electronics to function properly.

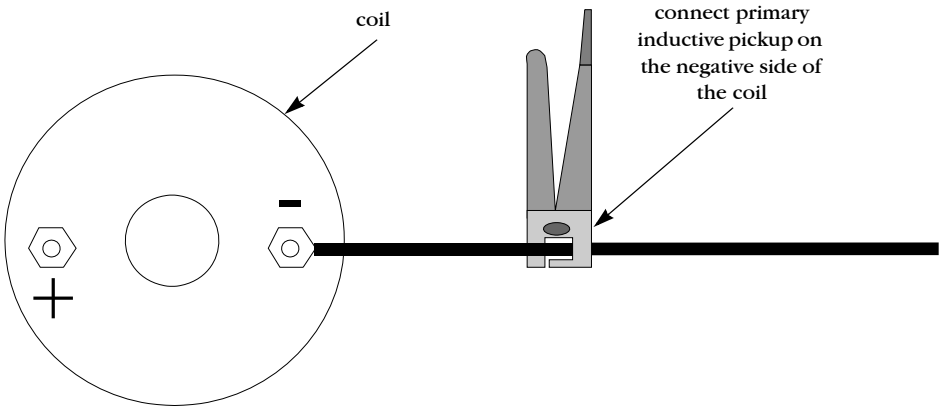


Figure 3-5: Connect the Primary Inductive Pickup

PRE-RUN INSPECTION

Perform a vehicle inspection before making a run. Check the following:

- Check the radiator coolant (if applicable) and oil levels.
- Check the fuel source.
- Rotate the drum and check for rocks caught in the tire tread that could fly out.
- For scooters equipped with a drive chain, check the chain and the chain master link. Make sure it is lubricated and adjusted to the proper tension.
- Check the tire pressure and tire speed rating. Improperly inflated tires or exceeding the maximum speed rating can result in premature wear or severe tire damage. Make sure the tire has no major deficiencies (cracks in sidewalls, tread life, etc.).
- Visually inspect the vehicle. Make sure it is in safe running order.
- Make sure ear protection and safety glasses are used when the dyno is being operated.
- Check the tie-down straps to make sure that they are tight and secured.
- Check the drive tires to be sure that they are aligned correctly on the dynamometer's drums.
- Keep all rotating components clear at all times.
- Only the operator should be near the dyno or the vehicle during the test.
- Never allow any person(s) to stand behind the dyno or vehicle when it is being operated.
- Perform any other safety inspections appropriate to running your vehicle on the dyno.

Never allow any person(s) to stand behind the dyno or vehicle when it is being operated. Only the operator should be near the dyno or the vehicle during the test.

Before Starting the Engine

Connect an exhaust hose or hoses (if dual exhaust) on the vehicle, make sure the hose fits over the tail pipe, is not plugged or kinked and the hose is vented correctly out of the dyno room.

Engine exhaust contains poisonous carbon monoxide gas. Breathing it could cause death. Operate machine in well ventilated area.

Engine Warm Up

Warm the vehicle's engine and drivetrain before beginning testing. Consistent engine temperatures will assure your runs are repeatable.

After Engine Warm Up

Always leave the vehicle in neutral (automatic transmission) or in first gear (manual transmission), with the engine off, and make sure the park brake and the dyno brake are on when you get off the vehicle on the dyno.

- Fix any fuel, oil, or coolant leaks that may have shown up after engine warm up and check the carburetor for leaks.
- Any loud or unusual engine noises or excessive exhaust smoke should be resolved before continuing.

MAKING A TEST RUN

Dyno runs provide safe, reliable road testing right in the shop. The dyno allows you to measure, record, and diagnose performance problems quickly. The dyno combined with WinPEP 7 produces consistent, easily interpretable power graphs. Use the following instructions to ensure repeatable and accurate measurements.

1 Verify the vehicle is secured properly.

2 Release the dyno brake by pressing the brake pedal.

3 Slowly accelerate the vehicle to 20 m.p.h.

4 Test the tachometer operation.

  4a Rev the engine. The gauges on the computer screen should be moving. If the tachometer is moving but not registering the correct RPM values, the number of degrees of revolution of the crank shaft (the plug fires number) is incorrect.

  4b Stop the vehicle, return to the MakeRun Configuration dialog box, and enter the correct value for the plug firing order.

5 Step off the brake pedal to apply 100% braking and slow down the vehicle.

CAUTION

Using the vehicle's own brakes to slow or stop the drum at speeds over 30 m.p.h. can severely over heat the brake parts. The vehicle's brakes should be used in an emergency stop situation only.

6 Shut the engine off and put the vehicle in gear (manual transmission) or apply the parking brake (automatic transmission).

7 Set the vehicle's parking brake and leave the dyno brake on.

8 Perform a final inspection.

- Verify the drive tire's alignment on the dyno drums.
- Make any adjustments to the tie-down straps as needed.
- Perform any other safety checks that you deem appropriate to your particular situation.

You are now ready to make a high speed run on the dyno. Refer to your WinPep 7 User Guide for more detailed instructions.

PREVENTATIVE MAINTENANCE

This section contains basic preventative maintenance and troubleshooting information.

To maintain proper dynamometer operation, Dynojet recommends you make routine checks of the dyno.

- Drum—keep the drum clean and keep all objects clear of the drum.
- Carriage Slide—keep the carriage slide clean and lightly lubricated.

ADJUSTING THE BRAKE

Use the following instructions to prevent the brake from dragging.

1 Remove any vehicles from the dyno.
2 Push the brake pedal until it stops.
3 Using your hand, turn the drum.
4 Verify the brake is not dragging.
5 If the brake is dragging, adjust the brake.

Using a 7/16 open end wrench, adjust the brake stop bolt until there is no brake drag.

Note: Adjusting the bolt too loose or too tight can cause brake drag.

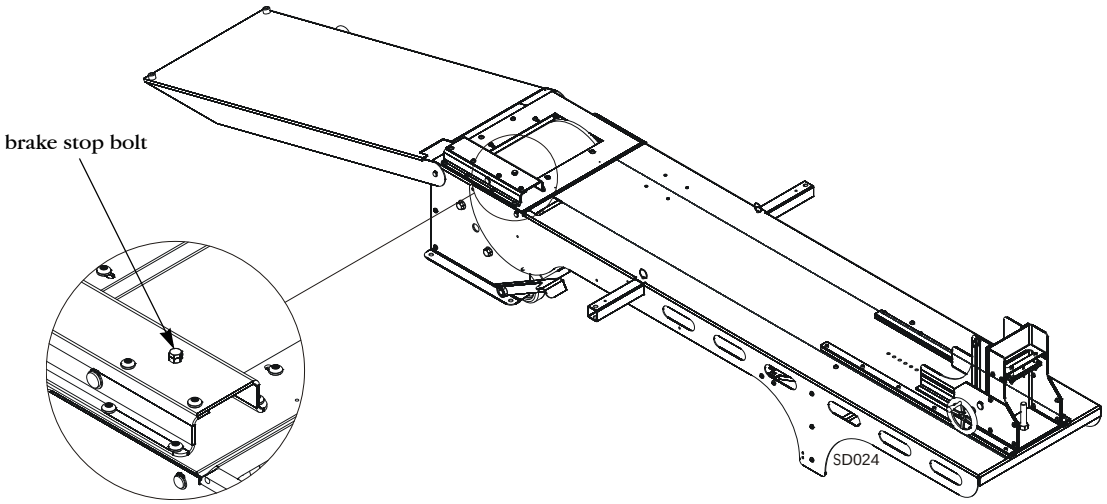


Figure 3-6: Adjust the Brake

ADJUSTING THE BRAKE TENSION

Use the following instructions to adjust the brake tension.

1 Locate the eyebolt brake tension adjuster.

2 With the brake release pedal in the up position, turn the 1/4-20 nut on the eyebolt clockwise to increase the spring tension until the drum can no longer be turned by hand.

3 Verify the brake releases when the pedal is fully depressed.

Note: The eyebolt can be adjusted until it touches the lever on the release shaft mechanism. If the eyebolt makes contact when the brake release pedal is fully depressed, then the eyebolt has been adjusted too far. Back off the eyebolt nut until it no longer contacts the lever.

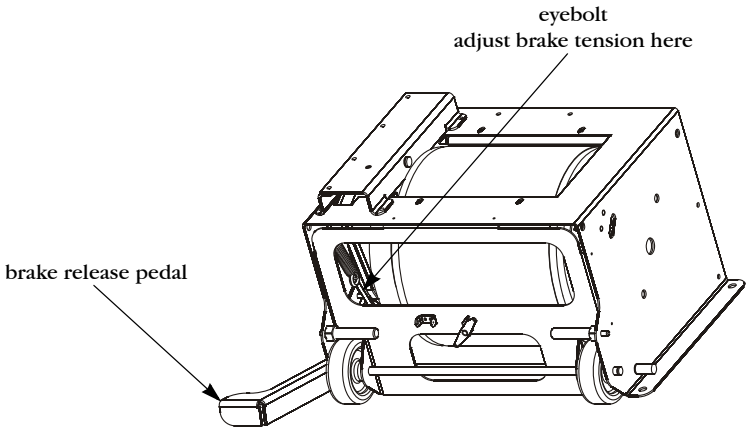


Figure 3-7: Adjust the Brake Tension

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